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Determinants for the formation of FTAs between LAC – Asia &Pacific region

중남미–아시아 · 태평양 지역의 자유무역협정 결정요인

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이 정 범

Determinants for the formation of FTAs between LAC – Asia &Pacific region

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Abstract

Determinants for the formation of FTAs between LAC – Asia &Pacific region

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The purpose of this study is to investigate the determinants of formation of free trade agreements(FTA) between two far regions: Latin America and Caribbean(LAC) and Asia-Pacific nations. Since 2004, countries of these two regions have formed actively the trade agreements, exceeding more than 24 FTAs until 2015.

Based on previous studies on the economic determinants of the formation of FTAs, this study focuses on the cases between 18 LAC countries and 25

Asia-Pacific nations' (450 pairs) FTAs. The empirical results indicate that the probability of the formation of FTAs between LAC – Asia & Pacific is higher: the larger and more similar economically, the greater the difference of the degree of industrial development, the smaller Asian countries' agricultural openness, the greater the amount of natural resource export from LAC partner to Asian partner.

Key words: Free trade agreement, Latin America and the Caribbean, Asia & Pacific, Determinants of FTA, Probit regression

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I. Introduction

1.1 FTA trends of Latin American countries

Since 1940s, most developing countries embraced inward-oriented economic growth, which accompanied import substitution industrialization (ISI) policy. Inefficient industrial structures were derived from protectionist economic policies (Sebastian, 1994). Neither most Latin American countries in that era were exceptions. Based on abundant natural commodities and huge internal market size, Latin American governments were trying to develop their industries by themselves without any competition with foreign products. They increased import tariffs and overvalued exchange rate. This policy led exports less competitive. One of the protectionist economists, Raul Prebisch argued that Latin American countries were required industrialization through import substitution to escape external economic dependency and that ISI policies could stimulate development (Prebisch, 1984, p. 179).

The protectionist policies flourished in most Latin American countries until shortcomings of such policies were exposed. Exports were discouraged, manufacturing sector turned out to be inefficient, distorted labor market and income distribution became unequal between protected sector workers and rural workers. Crucially, severe debt crisis in the late 1980s allowed

implementation of Washington Consensus in the early 1990s in Latin America and most countries accepted reducing their protectionist level and implemented neoliberal economic policies such as trade liberalization, privatization and opening investment market (Chong-Suk Park, 2010).

Since the implementation of neoliberal economic policies in Latin America, Free Trade Agreements have proliferated (Appendix I). Akio Hosono and Shoji Nishijima (2001) explain Latin American FTAs in three stages. The first phase is the recognition of FTAs as an effective trade policy instrument after joining GATT in 1986. Latin American countries especially Chile and Mexico learned that FTA is the efficient tool for access to other countries' markets. Second phase is deepening and widening of FTAs. North American Free Trade Agreement (NAFTA), Canada-Chile FTA, Chile-Mexico FTA are categorized in this more comprehensive FTA. Third phase is inter-regional FTAs. FTA pioneers Chile and Mexico started to conclude various bilateral trade agreements with Asian and European countries to diversify economic market since the year of 2000.

More broadly, Aggarwal and Ralph (2004) explain Latin American countries' trade agreements in 4 categories. As first phase unilateralism, which can be referred as internal trade reform, was sought to liberalize one country's market to the world. Chile was the representative case of succeeded unilateral

liberalization by one harsh authoritarianism of the Pinochet regime in the early 1980s. Later, Latin American countries participated in multilateral trade liberalization, which was institutionalized principally in the GATT and WTO negotiations in 1986. However, such multilateralist trade negotiation had complex problem as many countries were involved. As third phase, bilateral trade agreements proliferated between geographically concentrated or dispersed countries. Lastly, minilateralism, which is regional trade agreements, or transregionalism. Minilateral trade agreements are usually geographically dispersed trade agreements. The case of regional trade bloc in Latin America has existed since long time ago in the 1960 with the establishment of Central American Common Market (CACM), however in recent decades, MERCOSUR (1991) and NAFTA (1992) are considered as the recent trend of Latin American minilateralism with improved political relations in mind.

Furthermore, characteristics of Latin American FTAs can be divided by Central American FTAs and South American FTAs. Central American countries seek more to economic benefits by concluding FTA with the US so they can approach US market[1]. On the other hand, South American countries are trying to diversify their market not to be subordinated to US economy

[1] Mexico is considered as part of the North America

(Chong-Suk Park, 2010, p178).

1.2 FTAs between Latin America and Asia-Pacific

Including Preferential Trade Agreements, the number of Trade Agreements between Latin America and Asia-pacific (here after AP) countries is in total 23[2]. From the initial conclusion of LAC – AP Free Trade Agreement between Chile-South Korea in 2004, an average of 2 trade agreements took effect every year until 2016.

A research by Wignaraja et al., 2012, pointed out that both in Latin America and Asia, biggest traders and investors are tied with FTA. For instance, on the Latin American side 14 countries, (Argentina, Brazil, Chile, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela) who concluded FTA with AP countries, have been main economic partners with AP countries. On the Asian side, 11 countries[3] concluded FTA with Latin American nations, and they are

[2] Until April 2016.

[3] Australia, China, Hong Kong, India, Japan, Malaysia, Singapore, South Korea, Taiwan, Thailand, Vietnam

major traders and investors to Latin America. Authors suggest relations between Latin America – Asia trade, investment and FTAs and consequently as an economic purpose, some governments in both regions decided to conclude comprehensive trade agreements to get rid of not only existed tariff but also non-tariff barriers.

Table I-1. Status of LAC – AP FTAs (End April 2016)

	In Effect	
1	Chile-South Korea	2004
2	Panama-Taiwan	2004
3	Mexico-Japan	2005
4	Chile-China	2006
5	Guatemala-Taiwan	2006
6	Panama-Singapore	2006
7	Chile-Japan	2007
8	Chile-India (PTA)	2007
9	El Salvador-Honduras-Taiwan	2008
10	Nicaragua-Taiwan	2008
11	MERCOSUR-India (PTA)	2009
12	Chile-Austraila	2009
13	Peru-Singapore	2009
14	Peru-China	2010
15	Costa Rica-China	2011
16	Peru-South Korea	2011
17	Peru-Thailand	2011
18	Chile-Malaysia	2012
19	Peru-Japan	2012
20	Costa Rica-Singapore	2013
21	Chile-Hong Kong, China	2014
22	Chile-Vietnam	2014
23	Chile-Thailand	2015
	Signed	
1	Colombia-South Korea	2013
2	TPP Trans Pacific Partnership Agreement(Chile)	2016

Source: Athour's compilation

II. Literature review

2.1 Economic determinants for FTA

In the field of FTA research, there have been many attempts to find out expected welfare effects of concluded trade agreements. However, the study on specific determinants of conclusion of FTAs is relatively new field of research. Construction of econometric model of economic determinants of FTAs was initiated by Baier and Bergstrand in 2004. However, basically their research is based on previous literature about trade motivation. Authors assume that expectation of trade creation and trade diversion is the driving force of conclusion for the FTAs.

Baier and Bergstrand argued that the national welfare gains from FTA and probability of conclusion of bilateral trade agreement increase (i) geographically the closer between two countries; (ii) the more remote a neighboring partners from rest of the world; (iii) economically the larger are two partners' sizes but smaller are their differences; (iv) the greater the gap of capital-labor endowment ratios between two partners, and this stems from the gains of comparative advantages in Heckscher-Ohlin trade theory; but also, (v) the less the gap of capital-labor endowment ratios of two countries with respect to the rest of the world due to less inter-industry trade diversion.

With the use of Computable general equilibrium model(CGE), Baier and Bergstrand analyzed 1,431 country pairs that 286 country pair had FTA and 1,145 did not have FTA in 1996 (cross sectional in a given year). Their economic determinants are proved to be statistically significant as meaningful factors for the formation of bilateral FTAs.

Laura et al., benchmarked Baier and Bergstrand (2004) model of economic determinants of the conclusion of FTAs. They further developed explanatory variable groups in three categories, which are the determinants of the formation of Regional Integration Agreement (RIA): economic, geographical and socio-political variables. Authors used ordered logit and binary probit model, and proved that independent variables affect five different integration levels. For the interpretation of the coefficient in ordered logit, authors calculated exponential coefficients so that they could emphasize the effects of each variable. They argued that geographical variables such as distance between partners and remoteness with rest of the world are considered the most important factors for the RIAs formation.

Azar Akbarian (2011) directly adopted Baier and Bergstrand (2004) economic variables to the case of Economic Cooperation Organization trade agreements (ECOTA), which was concluded in 2003 between ten countries in Central and South Asia (Azar, 2011). He argued among five economic

determinants (distance, remoteness, economic size, economic difference, factor endowments), three of them were significant in the ECOTA formation; distance, remoteness and factor endowments.

Park, Soonchan and Sang-Hyun Yi (2015) analyzed determinants for the formation of Regional Trade Agreements (RTA) that were concluded during 1995-2010 in all around the world. They categorized 13 explanatory variables in 4 groups; Economic, political, socio-cultural, and economic-geography. Authors found that economic size and difference between partners are significant. Politically, military alliance and the democracy factors increase possibility of RTA. Moreover, cultural proximity determinants also contribute. The partners that share common language and religion are likely to form trade agreement.

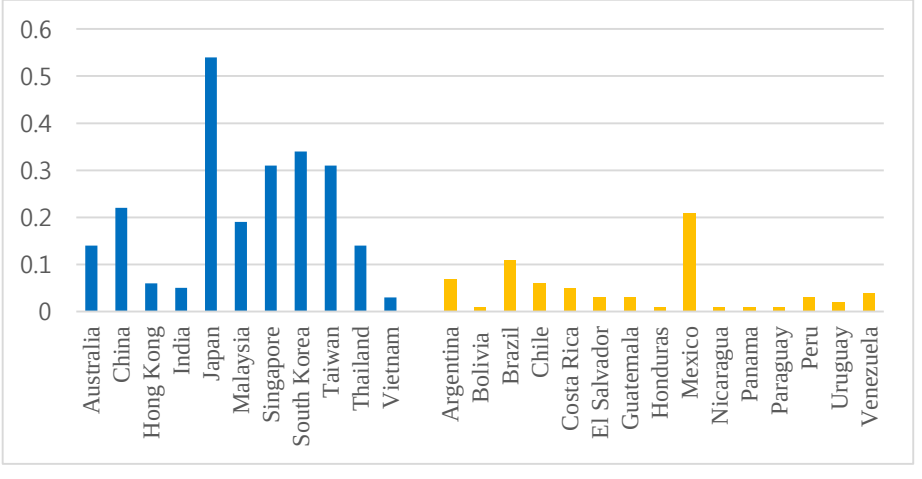
2.2 LAC-AP FTA determinants

An FTA does not cover only trade of goods. Thus the economic and geographic factors do not completely explain the formation of FTA. Specifically, geographic remoteness between Latin America and Asia discourages trade. Meanwhile, trade creation, investment expansion, and financial stability are the key economic incentives of FTA (Aggarwal and Koo

2006). However, rational countries seek to the formation of FTA for political or specific economic purpose as well.

Mexico and South American countries have tried to vary their market beyond the US market dependency (Akio and Shoji 2001, Chong-Suk Park 2010). As Baier and Bergstrand(2004) argued, difference of factor endowments between two parties is one of the key economic determinants of bilateral FTA. But more specifically Latin American countries that expect FTAs with East Asian countries will increase inter-industry trade by strong manufacturing sector of East Asian countries (Akio and Shoji 2001). The global value chain and production networks are the factors underlie the increase of Latin America-Asia FTAs (Wignaraja et al., 2013).

Figure II- 1 . Level of industrial competitiveness (2003)



Source: Competitive Industrial Performance index by UNIDO

Agricultural products have been traditional export goods of many Latin American countries. When LAC governments are under negotiation of trade agreement with advanced countries, reduce of agricultural protections and nontariff barriers are the key request of side of Latin American countries (Aggarwal and Espach 2004).

Jeffrey D. Wilson(2012) argued in his article that since the middle of 2000s, the governments of South Korea, Japan and China have sought to resource-related FTA due to instability of the global price of raw material. Consequently, East Asian countries approached to FTA with Latin American countries with the concern over resource security.

There exist outward oriented motivations that affect East Asian countries to form an FTA with the Latin American countries. China's motivations vary from resource security (economic) to politics and diplomacy (Carol Wise, 2016). In the case of South Korea, strategic considerations for the political-economic peer pressure put forward to the bilateral FTAs with Latin American countries to preoccupy those huge export markets mainly against China and Japan.

III. Analytical Framework

3.1 Hypothesis

Based on the literature review, it is constructed five hypothesis in this study, which are the distinctive determinants of the formation of FTA between LAC and AP countries. Following each hypothesis, we will evaluate empirically the relationship between the probability of the conclusion of bilateral FTA and each specific factor using probit model.

Hypothesis 1: The probability of the formation of an FTA between LAC-AP is higher the larger are two partners' economic sizes.

This hypothesis can be a proxy of each country's market size. Latin American countries are trying to diversify their export market beyond the US. Chile and Mexico, which are the FTA pioneers in Latin America, initiated their negotiation with Asian countries in this context. Thus the likelihood of an FTA between LAC-AP will be increased the bigger the both partners' market sizes. The net welfare gain from an FTA will be higher when the two partner's economic size is larger due to the scale-economies effects.

Hypothesis 2: The probability of the formation of an FTA between LAC-AP is higher the smaller are their difference of economic sizes.

The net welfare derived from one concluded FTA between economically symmetric countries will be better than asymmetric partner's FTAs. Economically bigger country can be benefited more from an FTA than its smaller partner. Baier and Bergstrand (2004) revealed that as the difference of economic size increases, the loss of trade of smaller partner compared to larger partner increases. Thus, the second hypothesis is that the likelihood of an FTA between LAC-AP decreases with economic disparity between two partners since one of the countries' total welfare decreases by the difference of economic sizes.

Hypothesis 3: The probability of the formation of an FTA between LAC-AP is higher the larger are their gap of industrialization.

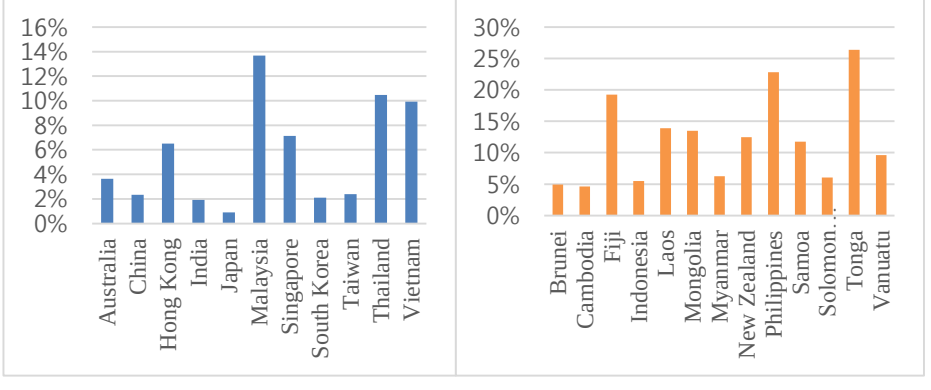
The larger the gap of industrialization between countries of Asia and Latin America, both trading partners specialize more in the industries where they have comparative advantages and eventually their net welfare gains from an FTA increases. AP countries that formed FTA with LAC are highly industrialized countries. Latin American countries expected spill-over effects of technologies from FTA with Asian countries. Thus, the third hypothesis is that the likelihood of an FTA between LAC-AP increases with the larger gap of the factor endowments between two countries.

Hypothesis 4: The probability of the formation of an FTA between LAC-AP is higher the smaller AP countries' agricultural openness.

As agricultural products are most Latin American countries' traditional export goods, they have tried to open Asian partner's agriculture market during FTA negotiations. Also, Latin American countries have maintained protectionist stance when they negotiate FTA with the countries that have comparative advantage in agriculture (e.g. US). However, on the contrary, Latin American countries strongly insist Asian countries to open their agricultural market under the FTA. Thus, the more closed Asian partner's agricultural sector, the likelihood of the formation of FTA will be increased as more Latin American countries initiate FTA negotiation to expand their market.

Figure III- 2 . Agricultural openness of Asia-pacific countries (2003)

<Countries that formed FTA with LAC and others>

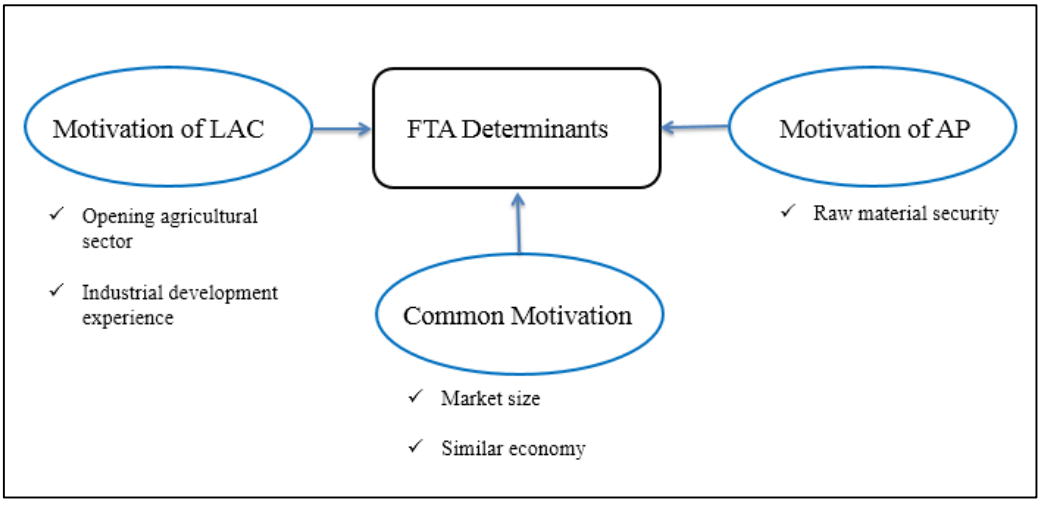


Source: Author's calculation based on IMF and FAO data

Hypothesis 5: The probability of the formation of an FTA between LAC-AP is higher the greater the amount of natural resource export from LAC partner to AP partner.

In recent decade, Asian countries with scarce natural commodities have been using FTAs with resource-exporting countries such as LAC to guarantee their resource security. The matter of resource security is huge motivation for some Asian countries to form an FTA with Latin American countries. Especially South Korea, China, and Japan include 'resource cluases' in their FTA with the resource suppliers (Jefferey, 2012). Thus, the more AP countries import raw material from LAC, the likelihood of FTA will be increased.

Figure III- 3 . Hypothesis structure



3.2 Assumptions

This study adopted the model of Baier and Bergstrand (2004). There explanatory variables consist of economic factors for the FTAs. They make four assumptions to make their analysis tractable and to limit the study's scope and length.

i) In the absence of special interest lobbies or distributional preferences, a government would act as a social planner, maximizing welfare of the country's agent. Internal political factors do not affect a country's decision on FTA formation.

ii) Decision for a pair of countries' governments to form an FTA is based upon the welfare of only representative agents of the country pair, and possible net welfare loss to nonmember countries does not exist. External political factors do not influence on country's decision for the FTA.

iii) FTAs are bilateral, rather than multilateral.

iv) As there study was conducted empirically in cross-sectional variation in FTAs for a given year (1996), they assume that each country pair makes a decision in 1996 to form or not form an FTA, or

to enforce or not enforce an FTA formed prior to 1996.

Unlike the BB theory, this study's scope is specifically on FTAs between LAC-Asia. Thus, this study will develop the Baier and Bergstrand (BB) model by adding other political or social explanatory variables and excluding some geographic variables.

BB model's i and ii assumptions are rejected in this study because it is considered that peer pressure among Asian countries and the participation in regional bloc determinants are not pure economic motivations for FTA decision. Assumptions iii and iv of BB model are adopted and modified in this study.

i) FTAs are bilateral, rather than multilateral. For example, P4 among Chile-Brunei Darussalam - New Zealand – Singapore in 2006, FTA among El Salvador – Honduras – Taiwan in 2008, PTA among Mercosur – India in 2009.

ii) Each country pair makes a decision in a given year 2015 for the formation of bilateral FTA, and also the decision on enforcement of an FTA formed prior to 2015.

3.3 Empirical model

This study adopts the qualitative choice model of Mcfadden (1975, 1976) as an econometric framework. Basic equation of probit regression is:

$$y^{*}=\beta_0 + x\beta + e$$

Dependent variable $y^{*}$is unobserved (qualitative) variable. The qualitative variable considers the difference in utility levels from entering the FTA. x is a vector of independent variables, β is a vector of parameters. Error term e is assumed to have a standard normal distribution, which is independent from x (Baier and Bergstrand, 2004).

For the empirical applications, dependent variable, which is FTA membership, was treated as a binary variable. If two countries have same concluded bilateral FTA, value 1 was given and 0 else. The probability of the formation of bilateral FTA can be expressed:

$$\mathrm{P}(\mathrm{FTA}=1)=\mathrm{P}(y^{*}>0)= \mathrm{G}(\beta_0 + x\beta)$$

Again, if two countries concluded FTA (indicating $y^{*} > 0$), they take the value 1, and 0 if a country pair does not have an FTA (indicating $y^{*} \leq 0$). G() is the standard normal cumulative distribution function, which ensures that P(FTA = 1 or FTA = 0) lies between 0 and 1.

The response probability function of LAC-AP FTA is :

$$P(FTA = 1) = P(y^* > 0) = G(\beta_0 + RGDP_{ij}\beta_1 + DRGDP_{ij}\beta_2 + CIP_{ij}\beta_3 + AGOP_i\beta_4 + RMTR_{ij}\beta_5)$$

$$P(FTA = 0) = P(y^* < 0) = G(\beta_0 + RGDP_{ij}\beta_1 + DRGDP_{ij}\beta_2 + CIP_{ij}\beta_3 + AGOP_i\beta_4 + RMTR_{ij}\beta_5)$$

3.3.1 Explanation for variables

Economic variables such as RGDP and DRGDP were measured similarly with BB model variables (the expected signs are in parentheses):

- Total bilateral market size RGDP $= \log (RGDP_i + RGDP_j)$ (+) with $RGDP_i$, $RGDP_j$ denoting the real GDP of countries i(AP), j(LAC) in 2003
- Total difference of bilateral market size DRGDP $= |RGDP_i - RGDP_j|$ (-)

- $CIP^4 = |CIP_i - CIP_j|(+)$(proxy of difference of factor endowments between countries i,j. BB named this variable as DKL, which means difference of capital-labor ratio. BB used real GDP per capita as DKL variable)[5]

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[4] Competitive Industrial Performance index by UNIDO

[5] According to UNIDO, "The CIP index consists of eight sub-indicators grouped along three dimensions of industrial competitiveness. The first dimension relates to countries′ capacity to produce and export manufactures and is captured by their Manufacturing Value Added per capita (MVApc) and their Manufactured Exports per capita (MXpc). The second dimension covers countries′ level of technological deepening and upgrading. To proxy for this complex dimension, two composite sub-indicators – industrialization intensity and export quality have been constructed. The degree of industrialization intensity is computed as a linear aggregation of the Medium- and High-tech manufacturing Value Added share in total Manufacturing Value Added (MHVAsh) and the Manufacturing Value Added share in total GDP (MVAsh). Countries′ export quality is obtained as a linear aggregation of the Medium- and High-tech manufactured Exports share in total manufactured exports (MHXsh) and the Manufactured Exports share in total exports (MXsh). Finally, the third dimension of competitiveness entails countries′ impact on world manufacturing,

- Agriculture sector openness of AP countries AGOP = $(AGEX_{Wi} + AGIM_{Wi})/RGD_i$ (-) with $AGEX_{Wi}$ and $AGIM_{Wi}$ denoting export and import of agricultural products of Asia-Pacific countries with the world.

- Raw material trade RMTR (+) is bilateral export value of raw material (oil, natural gas, mineral, coal) from Latin American partner to Asia-Pacific partner (see Appendix II).

Table III-2. Summary of variables

Variable	Expected result	Description
RGDP	(+)	Total bilateral market size
DRGDP	(-)	Total difference of bilateral market size
CIP	(+)	Competitive Industrial Performance index
AGOP	(-)	Agriculture sector openness of AP countries
RMTR	(+)	Raw material trade from LAC to AP

both in terms of their value added share in World Manufacturing Value Added (ImWMVA) and in World Manufactures Trade (ImWMT). The CIP index is a composite index obtained through a geometric aggregation of these six sub-indicators to which equal weights have been assigned".

3.3.2 Explanation for data

As stated in former session (3.2 Assumptions), this study assumes all the FTAs as bilateral between pairs of countries measured in binary variable. This dependent variable consists of the pairings of 18 LAC countries that formed FTA including PTA with AP countries, and 25 Asia & Pacific countries that were i) defined as Asia & Pacific by the US department of state, ii) member of the WTO but, iii) 11 among 25 are having trade pact with LAC countries. Hence, 450 pairings (18×25) of LAC – AP countries were used as observation (Appendix IV). Information of Latin American countries' FTAs was referred to Organization of American States (OAS).

In spite of the cross-sectional analysis, a potential endogeneity problem can interfere in the empirical result. Likewise, in the context of our theoretical model, economic characteristics of each country might have affected to the decision of FTA in 2015. Unlike the assumption that this study established; each country pair makes a decision in a given year 2015 for the formation of bilateral FTA, majority of FTAs in this study were formed prior to 2015 indeed. The earliest bilateral FTA was in 2004 between Chile – South Korea. In this study's theoretical model, each FTA may well be affected by endogeneity of five variables in several years before the formation of FTA in

2015. To account for this, we used the year of 2003 data of GDP, CIP index, and volume of trade (agricultural goods, raw material).

GDP data were adopted from IMF[6], CIP index from the United Nations Industrial Development Organization (UNIDO)[7]. The information of agricultural trade was collected from Food and Agriculture Organization (FAO)[8]. The data of resource export of Latin American countries to Asian partners has been collected from UNCOMTRADE[9], and the information of export to Taiwan from Bureau of Foreign Trade of Taiwan[10].

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[6] International Monetary Fund, World Economic Outlook Database, September 2003

[7] Competitive Industrial Performance Index (2003) http://www.unido.org/data1/Statistics/Research/cip.html

[8] FAO http://faostat3.fao.org/download/T/TM/E

[9] UNCOMTRADE , http://comtrade.un.org/db/mr/rfCommoditiesList.aspx

[10] http://www.trade.gov.tw/english/Pages/List.aspx?nodeID=94

IV. Empirical Results

4.1 Analysis on the determinants for Free Trade Agreements between Latin America and Asia-Pacific

The result shows that all the variables are statistically significant. As a distinct characteristic of probit coefficient, it should be calculated marginal effect of each coefficient to see the impact of each explanatory variable to dependent variable. The result shows that difference of the level of industrialization between two countries and agricultural openness of AP countries influence more on the probability of FTA than other factors.

Table IV-3. Result 1

	(1) model1	(2) model2	(3) model3	(4) model4	(5) probability ME
	Dependent variable : FTA				
RGDP	0.405***	0.315***		0.260**	0.02178**
	(0.119)	(0.117)		(0.115)	(0.009)
DRGDP	-0.466***	-0.439***		-0.388**	-0.03257**
	(0.161)	(0.157)		(0.158)	(0.013)
CIP	2.565***	2.175**	1.518**	2.084**	0.17477**
	(0.962)	(0.972)	(0.708)	(0.988)	(0.087)
AGOP		-4.764*	-5.237**	-4.328*	-0.36300*
		(2.518)	(2.278)	(2.485)	(0.202)
RMTR			0.039**	0.029**	0.00245*
			(0.016)	(0.014)	(0.001)
Constant	-3.788***	-2.930***	-1.372***	-2.715***	
	(0.644)	(0.699)	(0.219)	(0.674)	
Observations	450	450	450	450	450
Log Likelihood	-98.86	-96.75	-97.83	-93.54	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Another experiment was conducted to see whether this model is specific to Latin America-Asia Pacific FTAs. This is the result of probit regression that applied same variables in same model but dependent variable is the internal FTAs of Latin American countries. It shows that agriculture openness and raw material trade variables are not significant in this case and also standard errors are much higher than the case of LAC-AP FTAs.

Table IV-4. Result 2

	(1) model1	(2) model2	(3) model3	(4) model4
Dependent variable : FTA				
RGDP	0.514***	0.511***		0.439**
	(0.187)	(0.188)		(0.194)
DRGDP	-4.462***	-4.443**		-4.587***
	(1.723)	(1.728)		(1.754)
CIP	10.468*	10.406*	4.241*	12.413**
	(5.382)	(5.396)	(2.329)	(5.677)
AGOP		-0.082	-0.131	-0.020
		(0.457)	(0.451)	(0.464)
RMTR			0.024	0.019
			(0.015)	(0.014)
Constant	-1.705**	-1.679**	0.175	-1.503**
	(0.712)	(0.727)	(0.181)	(0.735)
Observations	136	136	136	136
Log Likelihood	-80.52	-80.50	-83.63	-79.50

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

V. Conclusion

The main purpose of this study was to find out that under which conditions LAC countries and AP countries form an FTA. After initiated by Baier and Bergstrand's research, there have been attempts to develop a model about the determinants for the FTAs from world-wide to particular regional scope. This study is meaningful and differentiated from previous studies. Its research scope is specialized to the FTAs that formed between LAC and AP countries, and consequently, explanatory variables are specifically explained in those FTAs. It is proved that those variables are not significant when applied to probit regression on internal Latin American FTA cases.

The main findings can be summarized that the likelihood of an FTA between pair of countries are higher: (i) the larger and more similar economically are two trading partners, (ii) the larger the gap of industrial competitiveness between two parties, (iii) the less AP countries' agricultural openness is, (iv) the greater the amount of natural resource export from Latin America to Asia-pacific countries.

More concretely, it is proved that two economic variables, which are economies of scale and gap of economic size between two parties are significantly influence on both regressions. As those two variables are based

on previous study, thus, we would carefully mention that Baier and Bergstrand's research was well constructed. Meanwhile, among five factors in our study, it is turned out that LAC countries' will of agricultural market expansion motivates more than other factors to form an FTA with AP countries.

Some limitations remained in this study. Firstly, we conducted analysis with cross sectional data to minimize endogeneity on government´s decisions to the formation of FTA. However, the result of regression could have been altered if it was tried with more elaborate panel data in the same model. Secondly, as this study adopted explanatory variables by reviewing the negotiation process and literatures about FTA formation, there could be omitted variables that were not applied properly in the model. Nevertheless, this is the first attempt in the field of factors for the FTAs to figure out particular determinants for the formation of FTAs between Latin America and Asia-pacific countries.

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Appendix I. LAC FTA status with the world 1994 - 2016

In Effect		
1	NAFTA	1994
2	Chile-Canada	1997
3	Mexico-EU	2000
4	Mexico-European Free Trade Association	2001
5	Mexico-Israel	2001
6	Costa Rica-Canada	2002
7	Chile-EU	2003
8	Chile-South Korea	2004
9	Panama-Taiwan	2004
10	Chile-European Free Trade Association	2004
11	Chile-US	2004
12	Mexico-Japan	2005
13	Central America - Dominican Republic - US	2006
14	Chile-Brunei Darussalam-New Zealand- Singapore(P4)	2006
15	Chile-China	2006
16	Guatemala-Taiwan	2006
17	Panama-Singapore	2006

18	Chile-P4	2006
19	Chile-Japan	2007
20	Chile-India (PTA)	2007
21	El Salvador-Honduras-Taiwan	2008
22	Nicaragua-Taiwan	2008
23	MERCOSUR-India (PTA)	2009
24	MERCOSUR-Israel	2009
25	Chile-Austraila	2009
26	Peru-Singapore	2009
27	Peru-Canada	2009
28	Peru-US	2009
29	Peru-China	2010
30	MERCOSUR-Morocco(Framework Agreement)	2010
31	Costa Rica-China	2011
32	Peru-South Korea	2011
33	Peru-Thailand	2011
34	Chile-Turkey	2011
35	Colombia-European Free Trade Association	2011
36	Colombia-Canada	2011
37	Peru-European Free Trade Association	2011

38	Chile-Malaysia	2012
39	Peru-Japan	2012
40	Colombia-US	2012
41	Panama-US	2012
42	Costa Rica-Singapore	2013
43	Colombia-Peru-EU	2013
44	Central America-EU	2013
45	Panama-Canada	2013
46	Chile-Hong Kong, China	2014
47	Chile-Vietnam	2014
48	Central America-European Free Trade Association	2014
49	Honduras-Canada	2014
50	Chile-Thailand	2015
Signed		
1	MERCOSUR-Southern African Customs Union (PTA)	2008
2	MEROCSUR-Egypt	2010
3	Colombia-Israel	2013
4	Colombia-South Korea	2013
5	Colombia-South Korea	2013
6	TPP Trans Pacific Partnership Agreement(Chile)	2016

Appendix II. Raw Material Bilateral Export LAC-AP (2003)

Unit: US dollar.

HS 27: Mineral fuels, oils, distillation products, etc.

HS 74: Copper and articles thereof

HS 27			HS 74		
Reporter	Partner	Trade Value	Reporter	Partner	Trade Value
Brazil	World	3796209052	Argentina	China	2860330
Brazil	India	257170391	Argentina	Rep. of Korea	239431
Brazil	Rep. of Korea	126851945	Argentina	India	45052
Brazil	Singapore	103062246	Argentina	Australia	29250
Brazil	China	23912199	Argentina	Japan	22013
Brazil	Malaysia	14501485	Argentina	Thailand	3403
Brazil	Japan	6770	Argentina	Indonesia	1709
Brazil	Hong Kong	2329	Argentina	Hong Kong	87
Brazil	Australia	1099	Argentina	Malaysia	23
Brazil	Philippines	212	Brazil	China	9058651
Chile	Japan	90164	Brazil	Hong Kong	711599
Chile	Australia	89641	Brazil	Australia	88935
Costa Rica	Indonesia	2816	Brazil	Singapore	34359
El Salvador	Japan	50	Brazil	Japan	20255
Guatemala	China	20341	Brazil	Thailand	14034
Mexico	India	444475235	Brazil	Rep. of Korea	9379
Mexico	Japan	103496584	Brazil	Indonesia	3664
Mexico	Hong Kong	360232	Brazil	India	2446
Mexico	China	254319	Brazil	Viet Nam	180
Mexico	Malaysia	184119	Brazil	Malaysia	157
Mexico	Singapore	165061	Brazil	Philippines	5
Mexico	Vanuatu	101876	Chile	China	996564899
Mexico	Rep. of Korea	36454	Chile	Rep. of Korea	487739525
Mexico	Myanmar	17788	Chile	Japan	137740640
Mexico	Philippines	17026	Chile	Hong Kong	43709694
Peru	Singapore	4653012	Chile	Australia	23119658
Peru	Indonesia	198502	Chile	Thailand	9257581
Peru	China	22526	Chile	Singapore	8662683
Peru	Australia	225	Chile	Indonesia	5089491
Peru	Japan	23	Chile	India	956410
Venezuela	Singapore	200127580	Chile	Viet Nam	353156
Venezuela	China	20769	Costa Rica	China	15438
Colombia	China	1924734	Costa Rica	Philippines	5
Colombia	Japan	1608152	Guatemala	China	18319
Ecuador	Rep. of Korea	240712953	Guatemala	Hong Kong	9000

Reporter	HS 74 Partner	Trade Value
Mexico	Rep. of Korea	8688511
Mexico	India	1308216
Mexico	Hong Kong	605968
Mexico	Thailand	413180
Mexico	Japan	92686
Mexico	Malaysia	34845
Mexico	Indonesia	8740
Mexico	Singapore	5283
Nicaragua	China	1800
Panama	China	1218757
Panama	Hong Kong	68526
Panama	Rep. of Korea	22287
Paraguay	China	49350
Peru	China	71991456
Peru	Japan	8065462
Peru	Rep. of Korea	5644065
Peru	Singapore	2605701
Peru	India	2535811
Peru	Thailand	1045329
Peru	Indonesia	180271
Peru	Malaysia	76877
Peru	Australia	55
Uruguay	China	1799054
Uruguay	Rep. of Korea	164011
Uruguay	India	158998
Uruguay	Hong Kong	156449
Uruguay	Japan	21804
Venezuela	China	18148024
Venezuela	Rep. of Korea	4415967
Venezuela	India	906037
Venezuela	Hong Kong	121505
Venezuela	Japan	96188
Bolivia	China	399069
Colombia	China	16963335
Colombia	Korea	2725449
Colombia	Japan	481788
Colombia	Thailand	29534
Colombia	India	100273
Colombia	Hong Kong	65614
Colombia	Singapore	62381
Ecuador	China	637010
Ecuador	Korea	17331
Ecuador	Hong Kong	2455

Source: UNCOMTRADE

Appendix III. Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
FTA(binary)	450	0.0711111	0.2572964	0	1
RGDP	450	4.803079	1.667994	1.012691	8.477618
DRGDP	450	0.3571651	0.8171354	0.000518	4.188113
CIP	450	0.0928	0.1232853	0	0.53
AGOP	450	0.0872287	0.0670249	0	0.2638333
RMTR	450	0.832587	6.114511	0	99.65649

Appendix IV. Observation Countries

LAC	AP
Argentina	Australia
Bolivia	Brunei
Brazil	Cambodia
Chile	China
Colombia	Fiji
Costa Rica	Hong Kong
Dominican Rep	India
Ecuador	Indonesia
El Salvador	Japan
Guatemala	Laos
Honduras	Malaysia
Mexico	Mongolia
Nicaragua	Myanmar
Panama	New Zealand
Paraguay	Papua New Guinea
Peru	Philippines
Uruguay	Samoa
Venezuela	Singapore
	Solomon Islands
	South Korea
	Taiwan
	Thailand
	Tonga
	Vanuatu
	Vietnam

국문 초록

중남미-아시아·태평양 지역의 자유무역협정 결정요인

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본 연구에서는 무역 파트너로서는 지리적 이점이 불리한 중남미 국가들과 아시아와 오세아니아를 아우르는 아시아태평양 국가들 간의 무역협정의 체결에 영향을 미치는 결정 요인을 알아보고자 하였다. 2004년 한국과 칠레의 첫 FTA를 시작으로, 중남미와 아시아태평양 국가 간에는 2015년까지 총 25개의 무역협정이 발효 또는 체결되었다.

본 연구는 18개의 중남미 국가와 25개의 아시아태평양 국가들 간의 양자 FTA로 가정하여 총 450개의 쌍을 표본으로 가진다. 종속변수는 FTA 체결 유무에 따라 1 또는 0의 값을 가지는 이항변수의 형

태이며, 프로빗 회귀모형으로 분석하였다. 실험 결과, 양 지역 간 무역협정은 다음과 같은 상황에서 체결 가능성이 높아짐을 확인할 수 있었다. 두 파트너 국가의 경제규모의 합이 클수록 즉, 시장이 클수록, 하지만 경제 규모의 차이는 크지 않을수록, 산업 발전 정도의 차이가 클수록, 아시아태평양 국가들의 농업 시장이 폐쇄적일수록, 중남미 국가에서 아시아태평양 국가로 더 많은 천연 자원을 수출할수록 양 국가 간 무역협정 체결 가능성이 높아진다.

무역협정 체결의 결정요인에 관한 연구는 2004년 Baier and Bergstrand의 “Economic determinants of Free Trade Agreements”를 시작으로, 후속 연구들이 꾸준히 진행되었다. 연구 대상은 전세계 모든 FTA 또는 다양한 지역 간 협정을 대상으로 다양하게 시도되어 왔다. 본 연구는 선행 연구들에서 다루지 않았던 중남미와 아시아태평양 국가 간의 무역협정을 대상으로 연구를 시도한 첫 사례이다. 또한 설명 변수들도 양 지역 간의 무역협정 체결 요인을 설명하는 특수한 것임이 증명되어 의의가 있다.

키워드: FTA, 라틴아메리카, 중남미, 아시아 태평양, FTA체결 결정요인, 프로빗 회귀모형

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